6 Jly 1936

The Maryland Fruit Grower

January, 1936

Maryland State
Horticultural Society

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The Maryland Fruit Grower

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THE NEW OFFICERS

The officers of the Society for the year 1936 are: President, C. E. Bryan, Havre de Grace; First Vice President, Carlyle Barnes, La Plata; Second Vice President, G. William Gardenhour, Smithsburg; Secretary-Treasurer, A. F. Vierheller, College Park

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THE ANNUAL MEETING

The Thirty Eighth Annual Meeting of the Society, held at Hotel Alexander, Hagerstown, on January 7, 8, and 9, was among the best ever held. Attendance was good in spite of bad weather; the commercial and machinery exhibits were fine, and the educational exhibits, containing a fruit display, and showing effects of shade and improper maturity of picked fruit; an orchard survey; fruit disease display, etc., caused favorable comment. Each speaker did an excellent job and your Secretary attempts to summarize the points of each address:

F. P. Cullinan, of the Bureau of Plant Industry, U. S. Department of Agriculture, discussing handling of cover crops on the peach orchard stated that peach trees were quickly affected by the cover crop, hence the use of clean cultivation in the peach orchard. He reviewed the advantages of cover crops as adding soil fertility, maintaining organic matter; increasing moisture-holding capacity, and checking of growth for hardening up for winter. He outlined some experiments stating that among the things to be investigated were the growing of summer and winter cover crops and with the main objective of determining to what extent growth was retarded by cover crops and whether in the long run the benefits of cover crops did not overcome disadvantages and add to the soil humus and tree vigor. In the plots used, soybeans, buckwheat, crotalaria were sown in several plots seeded June 1st, disked down August 25, then sown to rye and vetch. Sweet clover was seeded March 20, grown one year with an occasional clipping then allowed to seed the second year and disked down. Korean lespedeza was sown March 20 then disked lightly the next March for natural reseeding. Another plot used no summer crop but a crop of winter rye and vetch was sown. This plot was duplicated and manure added annually. Experiments started in 1932. After four years, the trees being set 20 x 20 feet, it was found that the roots were not yet meeting in the centers. Trees were given nitrogen each year and complete fertilizer was used on cover crops. Moisture determinations have shown that the plot using no summer cover crop, but a winter cover crop of vetch and rye with manure was best, followed by the duplicate plot where manure was not used; after which soybeans, buckwheat, crotalaria, lespedeza and sweet clover gave best results in the order named. The probable explanation seemed to be a moisture saving condition since some of the summer crops had not been seeded during the time of best rainfall, while sweet clover and lespedeza were using moisture rather heavily during that time. There appeared also to be a possible nitrogen shortage at

the time when the trees needed it, but the cover crops were using it. He concluded that sweet clover was good in deep soil and optimum moisture conditions. However, on poorer soil, buckwheat and soybeans seemed better. During discussion it was agreed that millet, sudan grass and weeds were good if the soil and tree conditions were favorable for their growth without depleted soil moisture. Dr. Cullinan stated that the crotalaria plot was practically a weed plot, since crotalaria did not thrive under the conditions at the Beltsville Horticultural Field Station Station where the experiments were conducted.

According to John T. Bregger of the U. S. Soil Erosion Service, there is a geologic or natural erosion, but man-made erosion is most serious. This may be divided into gulley erosion; rill erosion, which is refilled by tillage; and sheet erosion, which slowly takes away the top soil. Fifty million acres of farm land is now useless from erosion, while 125,000,000 acres have lost more than 50% of their top soil. Erosion damage also extends to streams and reservoirs, by filling them with soil. It is estimated that in forest soils it would take 400,000 years to remove the top 7 inches of soil, or 1,800 years to remove a like amount of soil from grazing land and 87 years on land where crop rotations are practiced. However land kept fallow by continued cultivation loses 7 inches of top soil in 18 years. This is about the average life of a peach orchard. Maintenance of organic matter is important in erosion, since increases as organic matter decreases. Organic matter doubles the time required to remove the top soil by erosion. Growers should handle their land to prevent accumulation of great amounts of water in any one place and also aim to reduce the rapidity of flow of water. This may be done by such mechanical controls as diversion ditches, terraces or dams; or by vegetative methods, such as increased organic matter or growing of cover crops; of slowing down water run-off, yet not rob trees of moisture during dry spells. Buffer rows of cover crops every 4 or 5 rows of trees are of help. Soil once lost is lost forever. Each year, 800,000,000 tons of soil are washed away in the United States.

L. P. Batjer of the West Virginia Experiment Station concluded that soil fertility is important but physical properties of soil are more important to roots. In the average soil about half of the space is taken up by soil particles and the other half by pore space. In a good soil about a half of this pore space is air and the other half is water. The fact that soil physical texture is most important is shown by the fact that alfalfa roots have been found to penetrate 129 feet and squash plants have developed 15 miles of roots. Tree roots grow at almost any time, but grow best on trees when top growth is least. Growth practically stops when the leaves fall from the trees. It has been found that roots are most concentrated near the tree trunk. Nitrogen fertilizer broadcast under the tree increases the absorbing power of the root system by stimulation of root branching. In the average orchard about 60% of roots are in the upper 16 inches of soil; 30% being in the first 8 inches of soil. The average sandy soil can hold 8% moisture. If about half of this is available, there is about 5 inches of water available in 8 feet of soil. On the same basis, the Hagerstown soil series which can hold 30% of water has available about 20 inches of water in 8 feet. Since trees need about 4 acre inches of water per month, the Hagerstown series should carry trees for a long period of drought. Poor and shallow soils showed no benefit from dynamiting at the Kearneysville Experiment Farm and it was also found that deep-rooted cover crops should not be used on shallow soils as they compete

with the tree roots for moisture. Apple roots were found as deep as 15 feet in Hagerstown clay loam and were well distributed to an 8 foot depth.

Jackson B. Hester of Virginia Truck Experiment Station found that soils low in organic matter and with rather high acidity contain toxic aluminum, which makes phosphorus unavailable. By increasing the organic matter and sweetening soil by lime, potash, phosphorus and nitrogen are made more available. In handling cover crops, nitrogen fertilizer should be added to care for the tying up of nitrates in decomposition of such cover crops when turned under. The speaker found that if cover crops were disked under, there was rather slow decay, but if cut into the soil then allowed to lie awhile before being disked or turned under, there was better decomposition of the organic material.

W. C. Dutton of Michigan Experiment Station found that the stronger the concentration of lime sulfur the more injury to leaf and fruit, as well as to fruit bud formation. He felt that dry lime sulfur was a little safer than liquid lime sulfur; 4 lbs. dry lime sulfur being equal to 1 gal, of liquid. In some years wettable sulfurs were not as effective, pound for pound, as other sulfurs. We can expect less russet with wettable sulfurs than with lime sulfur and usually less injury with dry lime sulfur than with liquid. The addition of hydrated lime to either liquid or dry lime sulfur reduced scab control over lime sulfur used alone; although there was considerable variation in variety and orchard. Materials are not the most important thing to consider but proper use according to the material is essential. Failure to control is due to poor coverage and improper timing. The speaker advised climbing an occasional tree to study spray coverage.

J. M. Hamilton of New York Experiment Station concluded that the human factor is the big thing in spray and control program. In any spray program vigorous trees fare better than weak ones. The speaker stated that dilute copper solutions showed good control if used often enough to give coverage, but copper sprays showed considerable variation in washing off, with Bordeaux carrying the best copper load through rainfalls. Copper is treacherous and toxic and growers using it should expect some injury sometime so should always use lime in copper sprays.

W. S. Hough of Winchester, (Virginia), Research Laboratory feels that one favorable thing about aphis is that it injures fruit so that it is entirely out of all grades, even cider. After discussing the green apple aphid and green aphid, the speaker stated that the rosy aphid migrants were heavy the past fall and predicted that next spring would be a rosy aphid year since the insects have followed a four-year cycle in the Cumberland-Shenandoah Section. He also stated that the number of eggs noticed was no indication of the rosy aphis outbreak, since the eggs are usually tucked away or are hard to find, being usually on the lower part of the tree and not very abundant. The dormant period is the best time to control aphis, using tar oil. Lime sulfur and nicotine seems to be the second best control applied in the delayed dormant; or oil and cresylic acid may be used in the delayed dormant. One difficulty in delayed dormant spraying is that aphids move to the protected side of the tree and are missed if the grower sprays with the wind. The syrphid fly is of some help in control.

Using a very interesting set of lantern slides, Dr. A. Lee Schrader of the University of Maryland, discussed the pruning of peach trees to correct pruning mistakes which have resulted in dense tops of both young and bearing trees and poorly colored fruits. The main principle outlined for young

trees was slight heading back and thinning out by removal of entire branches in such a way as to allow the crop to bend the tree down for better exposure to sunlight. With bearing trees cuts should be made in 2 or 3 year wood to good lateral branches and *no heading* of one year wood should be done. If upright watersprouts are willowy, the retention of such wood is desirable in the upper part of the tree with no heading, for they will bend with cropping. In thinning out wood, clean cuts are essential, removing the entire branch and not cutting back to a small lateral. Too many watersprouts result on stubs of upright branches cut back to small laterals. Experimental work on young trees showed that one year of corrective pruning was sufficient to eliminate the dense top condition and increase fruiting and fruit color of young trees. With bearing trees, two years were needed to obtain the desired spreading response with elimination of excess watersprouts that previously resulted in poor fruit color.

P. D. Peterson, Pathologist of Freeport Sulfur Company, discussing apple scab disease, warned that scab usually starts early. Especially is scab prevalent in wet weather and bad weather may cause poor timing of sprays. Very few failures are due to material. Growers do not study their material, especially if it is new, while others cut down to the least number of applications. Some of the experimental trials of new material follow the lime sulfur schedule, spray for spray. In trying any new material the schedule should conform to the material and not the material to the schedule. Two types of sulfur are the liquid lime sulfur and the wettable sulfurs. Liquid lime sulfur is a compound soluble in water and caustic to leaves. The rate of drying greatly influences the rate of burn. Although sometimes this material will dry quickly, it may later go back into solution with dew or rain and cause burning. Wettable sulfurs are protective fungicides, although at high temperatures may scorch foliage and also burn out some scab. They are better used in more frequent applications, keeping foliage covered. Where wettable sulfurs are used the grower must be able to spray the orchard in three days. If scab has done serious damage it is better to use wettable sulfurs and save leaves, rather than try to burn out the scab. If frequent applications are necessary, the concentration of lime sulfur may be cut, or better alternate lime sulfur and wettable sulfur applications. Before using wettable sulfurs, study them and know their limitations. When lead arsenate is used with sulfur sprays, lime is a good safener, but may revert chemically, forming a carbonate which may release arsenic and cause burning.

According to W. N. Worthley of Pennsylvania State College codling moth is a national problem and spraying is the main point of attack. The speaker stressed timeliness, thoroughness, and the use of proper materials. Timing is more important in light infestations and the grower who tries to save too much on sprays, pays more per packed bushel. Lead arsenate is not ideal, as it is a poor contact insecticide and causes residue, but is most widely used. The Pennsylvania experiment showed it rather difficult to keep residue reduced, and yet control the moth worm. Reduction of infestation was best when spraying was done as heavily in the "off" as in the "on years. Fish oil spreader gave better control than skim milk, or casein plus hydrated lime. In cases where lime was used in a great amount, the effect of lead was reduced. Some experimental results seemed to indicate that fixed nicotine may offer possibilities and it is hoped that lead and nicotine combinations may be developed. The second step in codling moth control is scraping and banding trees. The speaker suggested pruning out of all injured wood, since first

brood worms seem content with any slight shelter offered by such broken places. Well-coated bands should get about 85% of the worms. Average banding cost 13 cents per mature tree, of which three-fourths was labor costs.

E. N. Cory, Maryland State Entomologist stressed thoroughness in all control methods. No short cuts or false economy. A survey of Maryland conditions showed poor control in poorly sprayed orchards. In orchards where the moth is at low ebb it should be kept there by thorough spraying; screening and packing houses; removal of props; scraping and banding of trees.

J. R. Magness of the Bureau of Plant Industry, U. S. Department of Agriculture stated that several injuries from various water relations are: (1) Bitter pit; sometimes called stippen or Baldwin spot, which seems to be caused by excessive moisture and usually occurs on very large fruit and on trees with light crops. (2) Drought spot, which may be a dry weather injury, or possibly some mineral deficiency in the soil. There is a possibility that lack of boron in the soil may cause this injury. (3) Water core, which is a breakdown occurring between the fruit cells and occurs in trees suffering for water. It usually appears in fruit exposed to the sun on the south and southwest side of the tree. Excessive sugar formation in the fruit may cause water core. (4) Fruit cracking is another injury about which we know very little. The factors influencing cracking are continuous moist atmosphere, especially in daytime. Such conditions are found during continuous rains where there is no moisture evaporation from the leaves. Fruit cracking may also occur following drought when fruits may actually take up moisture during rain. Apples do not crack when soil is moistened, but only when fruit is moistened. Cracking also might be explained by saying fruits are suffering for water during dry weather, when there is little fruit growth in size and sugar accumulates in the fruit. The soil is dry and if heavy rain occurs the water goes into the fruit skin and also through the tree roots. The fruits swell and burst. It is always likely that we will have cracking on some varieties unless we can control soil moisture. Mulching and irrigation may help control cracking and certainly any skin injury and russet will tend to increase cracking. On russeted fruit, there is more sugar accumulation under russet spots and also less natural wax on the fruit skin.

Dr. Lewis A. Fletcher of the Bureau of Plant Industry, U.S.D.A., speaking on the effects of thinning as related to biennial bearing, color and size of fruit outlined methods and results in the experimental thinning of York Transparent apples near Bancock, Maryland. Trees were 25 years old and received 10 lbs. of nitrate of soda per tree per year. Leaf area after thinning was 50 and 100 good leaves per apple, the thinning being done 20, 30, 45 and 60 days after full bloom. Results, first year on Transparent showed 3.3 bushels per tree of which 100% were harvested being above two inches in diameter. Check trees not thinned yielded 5 bushels per tree, about 50% of which was above 2 inches in size. The average yield of Transparents per year for the three year period was 3.8 bushels on trees thinned to 100 leaves per apple; 70% of which was above 2.5 inches, while the checks gave 2.7 bushels average per year, but only 2 crops were harvested in the three years, due to biennial bearing. The results show that the later thinning was done, after full bloom, the less fruit bud formation was attained on the trees next year. From practical standpoint, thinning to 100 leaves per fruit on Trans-

parent means fruits very far apart and on the average thinning to 50 leaves does not reduce crop very much commercially on account of better size. For better results he suggested Transparent thinned to not less than 50 leaves per apple, not less than 30 days after full bloom. Dr. Fletcher stressed the point that biennial bearing was the objective most emphasized and that the thinning was probably heavy for commercial practice. He advised growers not to look at the ground when thinning, but to think of what they wanted to attain and to thin toward that objective. Some preliminary work with Stayman, Delicious, Jonathan, Baldwin and Oldenburg shows that color and size were markedly increased but that thinning to 100 leaves per apple did not give much larger size than thinning to 50 leaves per apple, although such drastic thinning may result in crop reduction the year in which such thinning is begun.

The presidents of Horticultural Societies in the adjoining states reported on experience which might be of value to others. Mr. John Y. McDonald of West Virginia stated that the West Virginia Society had increased membership greatly and had successfully advocated lower rail rates for fruit, and the Society had staged a fruit show. He advocated the use of all means of advertising fruit; the use of better grading and packing and suggested a council of growers from the Cumberland-Shenandoah section to consider the immediate problems of the growers of that section. C. Purcell McCue of Virginia regretted the lack of orderly marketing, and advertising of fruit, and reported how Virginia was trying to obtain new outlets by sending a representative to various large cities, and by developing a system of better advertising. H. F. Hershey of Pennsylvania urged the production of as high percentage of No. 1 fruit as possible. He reported some excellent results in pollination of Delicious by top-working and stated that the bouquet method was not as satisfactory as top-working. He stressed timely spraying and cautioned against short cuts. He reported Pioneer and Cumberland peach as hardy and very good for roadside trade. Golden Jubilee was not as hardy, but topped the market and was much in demand as an ice-cream peach. Primrose was suggested as a good peach for local trade.

George M. Darrow of the Bureau of Plant Industry, U. S. Department of Agriculture discussing newer methods in cane fruit culture, said that from a Maryland survey the growers are using good and approved cultural methods. In a discussion of varieties, he suggested that the growers try the new Logan, an early black raspberry; also Naples, a New York seedling, coming 2 to 4 days after Cumberland, firm and diseased resistant. The Black Beauty was not recommended on account of small size, but Quillen, a large and disease resistant variety was suggested. Among the purple raspberries, which are good only for a local market, Potomac resists soil difficulties and Sodus, a New York variety were suggested as being vigorous and free from mosaic. Among the red raspberries, Latham and Chief are the best; Latham being the main red variety East of the Rocky Mountains. The speaker stated that the winter hardiness of red raspberries in this section is a matter of disease resistance. The Viking, which has the quality of Cuthbert, is not hardy in this section, due to disease and defoliation, which weakens the canes and allows winter killing. The Newburgh variety is really better than Latham, but not under Maryland conditions, due to disease. The Taylor variety was mentioned, being a new variety from New York. The berry is large and long, firm and of excellent quality. The canes are vigorous and resistant to

disease. The speaker emphasized that since the red raspberries are being grown, spraying may have to be adopted, and four sprays may be necessary; Bordeaux 4-4-50 being recommended. Lime sulfur, 1 to 12, was not as effective as Bordeaux, in tests made. Under blackberries the Brainard variety was mentioned. This is a late variety and not hardy. The speaker suggested that the Boysenberry, largest of all berries, might be tried in a limited way. This is a dewberry-raspberry cross. Dr. Darrow stated that the system of training and not fertilization made berries soft. He also showed a wide difference in decay between berries picking by various pickers. Since cooler berries have tougher skins, tests indicate that berries picked in the cool part of the morning and late afternoon keep better than those picked at mid-day. In all cases berries should be cooled as soon as picked.

F. S. Howlett of the Ohio State University stated that England is developing a self sufficiency based on fear of war. The English orchards are not as small as the Americans think and there is considerable development in fruit growing. About two out of five apples used in England are English grown. There is considerable increased interest in fruit growing. England feels that they can grow their own fruit and vegetables, but they have had their problems, much like those of the American grower. Fruit growing would increase more rapidly, except for difficulty in obtaining capital. There is also a lack of good varieties at certain seasons and a lack of cold storages. The foreign grower has to compete with the "Buy British" campaign, high import duties, and the National Mark system, which standardizes pack and grade of the English fruit. The speaker urged the American growers to send only their best fruit to England and to label it by grade; and stated that at best, conditions were unsettled. The effect of reciprocal tariff and agreements is unknown, but we cannot dump fruit on the English markets; we must buy in exchange; and we must look for strong competition from fruit grown by England and her colonies.

HAVE YOU PAID YOUR 1936 DUES?

West Virginia Horticultural Society meeting at Martinsburg, February 5 and 6. You should attend.

WHAT'S THIS?

Mr. Walter W. Simonds, Extension Forester, at the University of Maryland states that trees vary in their susceptibility to being struck by lightning. Investigation has shown that oaks, elms, pines, poplars, willows, and ashes are most susceptible to being struck in the order named. On the other hand, there is no record of a beech, holly, birch or horse chestnut, having been struck by lightning. But don't take chances by standing under any kind of a tree during a thunder-storm.

FRUIT TREES

FOR THE ORCHARDIST

APPLE TREES — PEACH TREES — CHERRY TREES — PEAR TREES

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At Prices You Can Afford to Buy At

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The method consists of diluting ½ pound of paradichlorbenzine in 1 gallon of Scalecide, then diluting this in 7 gallons of water. This is sprayed on and about the base of the peach trees and mounded. The best time for this application is in the fall, but the next best time is in the spring.

Growers who have used the liquid treatment with cotton seed oil will find the Scalecide treatment costing ½ as much. One of the large experiment stations expect soon to publish the information that ½ pound paradichlorbenzine with Scalecide proved to be as effective as 2 pounds with cotton seed oil in this years work.

Growers who have used only the old method of applying the paradichlorbenzine crystals will readily realize the great economy of the para-Scalecide method. Mr. B. M. Kleppinger of Cooperstown, Pa., reported at the N. J. Hort. Society meeting last month that he had used the liquid method (with cottonseed oil) for two seasons and had better control than with the old crystal method, with a great saving of labor.

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There is no spray or combination of sprays which will do the work of Scalecide. If for no other reason, use Scalecide for its effect in cleaning up brown rot cankers. Ask for new folder "Peach Trees Need Scalecide."

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